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10/664,842	09/18/2003	Jayant R. Kalagnanm	YOR920030280US1 (8728-638)	4870
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F. CHAU & ASSOCIATES, LLC 130 WOODBURY ROAD WOODBURY, NY 11797			FLEISCHER, MARK A	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/664,842	<b>Applicant(s)</b> KALAGNANM ET AL.	
	<b>Examiner</b> MARK A. FLEISCHER	<b>Art Unit</b> 3624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 June 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-13 and 15-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13, 15-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                      |                                                                   |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____                                                          | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### **Status of Claims**

1. This final Office Action is in reply to the response to the first non-final rejection filed on 20 June 2008.
2. Claims 1, 5, 11–13, 15 and 20 have been amended.
3. Claim 14 has been cancelled.
4. Claims 1–13 and 15–20 are currently pending and have been examined.

### ***Response to Amendment***

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action.
6. The objections to the drawings in the previous office action are withdrawn, in response to Applicant's amendments to the specification.
7. The objection to the specification in the previous office action is withdrawn in light of Applicant's amendments to the specification. Examiner has entered the amended specification.
8. The objection to claim 5 is withdrawn in light of Applicant's amendments.
9. The rejection of claim 5 under 35 U.S.C. §112, 2<sup>nd</sup> paragraph is maintained for the reasons set forth below.

### ***Examiner's Note***

10. Examiner acknowledges that Applicant has responded to Examiner's request for information under 37 CFR §1.105. Examiner reminds Applicant that 37 CFR § 1.56(a), states, in part:

The duty to disclose all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in a patent was cited by the Office or submitted to the Office in the manner prescribed by §§ 1.97(b)-(d) and 1.98. However, no patent will be granted on an application in connection

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with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct.

11. Examiner requested in the first Office Action that Applicant provide specific presentation materials from a conference in which the listed inventors of the instant application are identical to the listed presenters and where the title of the listed presentation is identical to the title of the instant Application and where the published abstract of the aforementioned presentation pertains to the subject matter of the instant Application, to wit:

“We provide a novel method for developing optimal sales plans for multiple products, i.e., multiple attributes and price classes, etc., contingent on different realizations of uncertain demand over multiple periods with the objective of maximizing expected revenue over using constrained capacity. These contingent plans satisfy business rules such as service level agreements etc.” (See INFORMS Miami 2001 Annual Meeting Cluster: Supply Chain & E-Market Optimization)

12. Applicant has responded by stating that “Materials related to the conference presentation ‘Accepting Bids Under Uncertain Future Demands,’ INFORMS Annual Meeting, Miami, Florida, November 5-8, 2001 cannot be readily obtained.” (Remarks, p.3).

- 13. Applicant is reminded that requests for information under 37 CFR §1.105 apply to the following individuals as stated under 37 CFR § 1.56(c):**

**(c) Individuals associated with the filing or prosecution of a patent application within the meaning of this section are:**

- (1) Each inventor named in the application;**
- (2) Each attorney or agent who prepares or prosecutes the application; and**
- (3) Every other person who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application.**

14. Examiner reiterates the request for Information under 37 CFR §1.105.

***Request for Information Under 37 CFR § 1.105***

15. 37 CFR 1.105. Requirements for information.

(a)

(1) In the course of examining or treating a matter in a pending or abandoned application filed under 35 U.S.C. 111 or 371 (including a reissue application), in a patent, or in a reexamination proceeding, the examiner or other Office employee may require the submission, from individuals identified under § 1.56(c), or any assignee, of such information as may be reasonably necessary to properly examine or treat the matter, for example:

(i) Commercial databases: The existence of any particularly relevant commercial database known to any of the inventors that could be searched for a particular aspect of the invention.

(ii) Search: Whether a search of the prior art was made, and if so, what was searched.

(iii) **Related information: A copy of any non-patent literature, published application, or patent (U.S. or foreign), by any of the inventors, that relates to the claimed invention.**

(iv) **Information used to draft application: A copy of any non-patent literature, published application, or patent (U.S. or foreign) that was used to draft the application.**

(v) Information used in invention process: A copy of any non-patent literature, published application, or patent (U.S. or foreign) that was used in the invention process, such as by designing around or providing a solution to accomplish an invention result.

(vi) Improvements: Where the claimed invention is an improvement, identification of what is being improved.

(vii) In Use: Identification of any use of the claimed invention known to any of the inventors at the time the application was filed notwithstanding the date of the use.

(viii) **Technical information known to applicant. Technical information known to applicant concerning the related art, the disclosure, the claimed subject matter,**

**other factual information pertinent to patentability, or concerning the accuracy of the examiner's stated interpretation of such items.**

1. This is a request that applicants provide the information identified above especially where emphasis added. If applicants have this information, then applicants are required, under the provisions of 37 CFR 1.56, to disclose the information to the Office.
2. Applicant is not required or being asked to conduct a search for information beyond applicants own immediate files. If Applicant does not have immediate knowledge of the information requested, then a statement that the information sought is unknown or not readily available to the. Applicant will be accepted by the office as a complete reply.
3. **Why the Request for Information is Reasonably Necessary:** Applicant likely may possess additional knowledge reasonably pertinent to the examination of this application. If so, please send only relevant and pertinent information to the Examiner. **Specifically, please send the Examiner information relating to the presentation by Inventors Jayant Kalagnanam, Gyana Parija and Monalisa Mohanty at the 2001 INFORMS Conference held in Miami, Florida on or about November 4 – 7, 2001 in addition to any other pertinent information.** Examiner has information that on November 5, 2001 between 4:15PM and 5:45PM, the aforementioned inventors gave a presentation entitled: "Accepting Bids Under Uncertain Future Demands" and Examiner requires the material presented to properly examine the instant application.
4. Information Requested of Applicants: **If Applicant possesses any of the information above, Applicant is required to send: publications of pertinent information as well as the dates of the aforementioned information. Note that publications include any presentation material relating to the aforementioned**

**presentation including copies of slides, PowerPoint computer files, notes, talking points, handouts and the like.**

### ***Response to Arguments***

16. Applicant's arguments received on 20 June 2008 have been fully considered but are not persuasive for the reasons set forth below. Referring to the previous Office action, Examiner has cited relevant portions of the references as a means to illustrate the systems as taught by the prior art. As a means of providing further clarification as to what is taught by the references used in the first Office action, Examiner has expanded the teachings for comprehensibility while maintaining the same grounds of rejection of the claims, except as noted above in the section labeled "Status of Claims." This information is intended to assist in illuminating the teachings of the references while providing evidence that establishes further support for the rejections of the claims.

17. Regarding claims 12–14, 16, and 17, Applicant has failed to rebut Examiner's Official Notices with regard to

- Claim 8: *utiliz[ing] any number of order entry devices such as point-of-sale terminals,*
- Claim 10: *track[ing] or monitor[ing] the number of specified events, items, or pieces of data that are computed, stored and/or collected.*
- Claims 12 and 13: *comput[ing] confidence intervals and levels using the aforementioned probability distribution functions for large and small sized data sets, respectively, and*
- Claim 14: *estimating a confidence interval is computed using a confidence level, and*
- Claim 16: *employing the use of decision variables in 'decision problems', and*
- Claim 17: *denoting quantity variables for specified stages or time periods in multi-stage stochastic programming problems by notation involving subscripts.*

which Examiner claims were old and well known in the art at the time of the invention. Examiner notes the following discussion of Official Notice taken from the MPEP:

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To adequately traverse such a finding, an applicant must specifically point out the supposed errors in the examiner's action, which would include stating why the noticed fact is not considered to be common knowledge or well-known in the art. See 37 CFR 1.111(b). See also *Chevenard*, 139 F.2d at 713, 60 USPQ at 241 ("[I]n the absence of any demand by appellant for the examiner to produce authority for his statement, we will not consider this contention."). A general allegation that the claims define a patentable invention without any reference to the examiner's assertion of official notice would be inadequate. If applicant adequately traverses the examiner's assertion of official notice, the examiner must provide documentary evidence in the next Office action if the rejection is to be maintained. See 37 CFR 1.104(c)(2). See also *Zurko*, 258 F.3d at 1386, 59 USPQ2d at 1697 ("[T]he Board [or examiner] must point to some concrete evidence in the record in support of these findings" to satisfy the substantial evidence test). If the examiner is relying on personal knowledge to support the finding of what is known in the art, the examiner must provide an affidavit or declaration setting forth specific factual statements and explanation to support the finding. See 37 CFR 1.104(d)(2). If applicant does not traverse the examiner's assertion of official notice or applicant's traverse is not adequate, the examiner should clearly indicate in the next Office action that the common knowledge or well-known in the art statement is taken to be admitted prior art because applicant either failed to traverse the examiner's assertion of official notice or that the traverse was inadequate. If the traverse was inadequate, the examiner should include an explanation as to why it was inadequate. (MPEP § 2144.03(C))

18. Applicant has not "specifically point[ed] out the supposed errors in the examiner's action, which would include stating why the noticed fact is not considered to be common knowledge or well-known in the art." In addition, Applicant's statements do not amount to a sufficient traversal because they incorrectly associate the referenced material in proximity to the Official Notices in the first Office Action (references to Applicant's disclosure) as amounting to reliance on Applicant's disclosure.

With respect to claims 12 and 13 Applicant misapprehends the source of the **Official Notices** by stating that it relies on Applicant's own disclosure and "the use of hindsight in establishing the rejection" (Remarks, p.14). Applicant states that the use of confidence levels and intervals in conjunction with a counter is not amenable to an Official Notice. Aside from the apparent peculiarity and non-standard use of the term 'counter', the term 'counter' merely tracks the total amount of realized order data (per claim 10). As such, it is merely a quantity reflecting a random variable which can be modeled as coming from either a normal distribution or gamma distribution,



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both of which are commonly used distribution functions that are old and well-known, and to which confidence levels and intervals are commonly associated per the Official Notice in the first Office Action.

With regard to the Official Notice of claim 14, the mere fact that Santos treats the two quantities separately does not sufficiently traverse the Official Notice. Indeed, in computing a confidence level, a necessary element is the confidence level associated with the probability that such an interval covers the mean. Such probability is commonly referred to as the confidence level which is intrinsically a standard element for computing the associated confidence interval as any standard statistics text book will show.

Applicant's belief that Examiner relies on Applicant's disclosure is incorrect. For example, Examiner, in the rejection of claim 16, merely recites elements of Applicant's disclosure that relate to the terms "decision variables" where the concept of 'decision variables' is old and well known, as previously stated, in the mathematical programming arts as any text book on mathematical programming, linear programming, etc. would show. Thus, there is no reliance on Applicant's own disclosure or impermissible hindsight.

With regard to the Official Notice of claim 17, Applicant again seems to confuse the Official Notice as a reliance on the prior art relied on in the rejection. The Official Notice does not rely on Santos, but is a statement that use of variables associated with time periods and stages are old and well known as any text on dynamic programming would show. **For these reasons, the above referenced Official Notices are taken to be admitted prior art.**

19. Insofar as Applicant's arguments with regard to reliance on Ahmed and Bichler, Applicant argues that neither Ahmed nor Bicher teach or suggest "tactical level decision making" and that a distinguishing feature of the invention is the capability to make tactical decisions, as opposed to strategic decisions. Applicant further provides the example of what they mean by a "tactical decision": a "recommendation for whether to accept an order for at least one of the multiple products at a time when demand exceeds a planned sales volume" (Remarks, p.12). Examiner respectfully disagrees with Applicant and notes that Santos specifically addresses this issue.

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Santos, in [0078-80] specifically refers to “make and sell decisions” based on accounting for “demand uncertainty”. This aspect is specifically addressed below in the claim rejections.

In response to Applicant's argument that there is no suggestion to combine the references, the Examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

To this end, the Examiner recognizes that references cannot be arbitrarily altered or modified and that there must be some reason why one skilled in the art would be motivated to make the proposed modifications. Although the motivation or suggestion to make modifications must be articulated, it is respectfully submitted that there is no requirement that the motivation to make modifications must be expressly articulated within the references themselves. References are evaluated by what they suggest to one versed in the art, rather than by their specific disclosures, *In re Bozek*, 163 USPQ 545 (CCPA 1969).

The issue of obviousness is not determined by what the references expressly state but by what they would reasonably suggest to one of ordinary skill in the art, as supported by decisions in *In re Delisle* 406 Fed 1326, 160 USPQ 806; *In re Kell, Terry and Davies* 208 USPQ 871; and *In re Fine*, 837 F.2d 1071, 1074, 5 USPQ 2d 1596, 1598 (Fed. Cir. 1988) (citing *In re Lalu*, 747 F.2d 703, 705, 223 USPQ 1257, 1258 (Fed. Cir. 1988)). Further, it was determined in *In re Lamberti et al* 192 USPQ 278 (CCPA) that:

- (i) obvious does not require absolute predictability;
- (ii) non-preferred embodiments of prior art must also be considered; and
- (iii) the question is not express teaching of references but what they would suggest.

According to *In re Jacoby*, 135 USPQ 317 (CCPA 1962), the skilled artisan is presumed to know something more about the art than only what is disclosed in the applied references. Within

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*In re Bode*, 193 USPQ 12 (CCPA 1977), every reference relies to some extent on knowledge of persons skilled in the art to complement that which is disclosed therein. In *In re Conrad* 169 USPQ 170 (CCPA), obviousness is not based on express suggestion, but what references taken collectively would suggest.

In the instant case, the Examiner respectfully notes that each and every motivation to combine the applied references is accompanied by select portions of the respective references which specifically support that particular motivation. As such, it is NOT seen that the Examiner's combination of references is unsupported by the applied prior art of record. Rather, it is respectfully submitted that explanation based on the logic and scientific reasoning of one ordinarily skilled in the art at the time of the invention that support a holding of obviousness has been adequately provided by the motivations and reasons indicated by the Examiner, *Ex pane Levensgood* 28 USPQ 2d 1300 (Bd. Pat. App. & Inter., 4/22/93).

#### **Reasonable Expectation of Success**

Obviousness requires only a *reasonable* expectation of success (see MPEP 2143.02). This foundation puts forth the standard that one of ordinary skill in the art would recognize a benefit or enhancement by combining the references. Obviousness does not require absolute predictability. It does not require that the benefit must be extraordinary, nor does it necessitate that profit is certain, or success guaranteed. The prior art can be modified or combined to reject claims as prima facie obvious as long as there is a reasonable expectation of success to those of customary proficiency. See *In re Merck & Co., Inc.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

It is understood that at least some degree of predictability is required, and that the Applicant may present evidence showing that there was no reasonable expectation of success. See *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976). However, this standard should not be mistakenly interpreted as an open door to declare that the Examiner's rationale is lacking any support at all, or that the Examiner's rejections do not show success *beyond* a reasonable expectation. Indeed, the standard is one of sensible success, not guaranteed or exceptional

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success. Evidence showing there was no reasonable expectation of success may support a conclusion of nonobviousness. Such evidence to the contrary must be supplied in support of such an allegation against the Examiner's rejections. Evidence should be clear, analogous to the references and claimed invention, and should not require excessive skill in the art to comprehend.

In addition, a reasonable expectation of success does not require that an observer be thoroughly proficient with the art or industry, nor does it require that the success be particularly evident to one of less-than-ordinary skill in the art. MPEP 2141.03 describes the level of ordinary skill in the art. Specifying a particular level of skill is not necessary where the prior art itself reflects an appropriate level. If the only facts of record pertaining to the level of skill in the art are found within the prior art of record, the court has held that an invention may be held to have been obvious without a specific finding of a particular level of skill where the prior art itself reflects an appropriate level. *Chore-Time Equipment, Inc. v. Cumberland Corp.*, 713 F.2d 774, 218 USPQ 673 (Fed. Cir. 1983). See also *Okajima v. Bourdeau*, 261 F.3d 1350, 1355, 59 USPQ2d 1795, 1797 (Fed. Cir. 2001).

### ***Claim Rejections - 35 USC § 112***

20. The following is a quotation of the second paragraph of 35 U.S.C. §112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

21. Claim 5 is rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim provides for *comparing the forecast and the planned sales volume* but does not specify how this comparison is to be made and is *prima facie* vague because the act of comparing is subjective and further implies only a human apprehension and assessment of relative values and there are no guidelines in the specification as to how this assessment is to be made. In addition, the term 'estimate' in conjunction with the aforementioned steps of 'comparing' are vague and indefinite and is a relative term and neither the claim nor the specification provide

a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

***Claim Rejections - 35 USC § 103***

22. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

23. Claims 1–13 and 15– 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ahmed, et al. (*A Multi-Stage Stochastic Integer Programming Approach for Capacity Expansion under Uncertainty*) in view of Bichler, et al. (*Applications of Flexible Pricing in Business-to-Business Electronic Commerce*) and further in view of Santos, et al. (US PgPub 20020143665 A1).

**Claims 1, 15 and 20:**

Note that although the wording and structure of claims 1, 15 and 20 are slightly different, they have the same scope and so are addressed together. Ahmed, as shown, describes and /or discloses the following limitations.

- *A method for developing an optimal sales plan for multiple products with multiple price classes* (Ahmed, in at least page 7, lines 2 and 3 describes math-programming formulations involving “multiple demand families” and “multiple product families”) *a contingent on different possible realizations of uncertain demand over multiple time periods* (Ahmed, in at least page 4, line 16 refers to “Multi-stage models extend two-stage stochastic programming models by allowing revised decisions in each time stage based upon the uncertainty realized so far.” (emphasis added) and in the abstract therein “Using a scenario tree approach to model the evolution of uncertain demand [...] we develop a multi-stage stochastic integer programming formulation for the problem.” (emphasis added) where the realized ‘uncertainty’

associated with 'uncertain demand' corresponds to *realization of uncertain demand* and the 'multi-stage' stochastic program corresponds to *multiple time periods*.) *with the objective of maximizing expected revenue over a constrained capacity, comprising:*

- *formulating a multistage stochastic program that generates a quantity of each of the multiple products to be sold in each of the multiple time periods* (Ahmed on page 4, line 19, describes a "multi-stage stochastic program") ...
- *executing the multistage stochastic program using the likelihood and the realized order data to generate a sales plan* (Ahmed, on page 4, line 3 states: "With the advent of stochastic programming and increased computational power, the use of scenarios to model uncertainties in planning models has become increasingly popular." (emphasis added) where the 'increased computational power' refers to *executing [a] stochastic program* on a computer. Further down on that page, Ahmed specifically refers to "Multi-stage models" that incorporate uncertainty to produce a *plan*.).

Ahmed does not specifically address the notion of *maximizing expected revenue*, or *that generates a quantity* but Bichler, as shown does. Bichler, in at least page 290, column 1 at the bottom, refers to "Revenue management originated [...] as the practice of controlling the availability and/or pricing of travel seats in different booking classes, with the objective of maximizing revenue and/or profits." (emphasis added) and later, on page 296, column 2, last paragraph, refers to the notion of expected values: "Bid pricing [...] seeks a price that maximizes expected profit [...]" (emphasis added) where 'maximizes expected profit' is analogous to *maximizing expected revenue*.

On page 290, column 2, Bichler refers to *multiple products* for which a 'quantity' is recommended: "In general, it is possible to increase revenue by optimal allocation of the total quantity across multiple price classes." (emphasis added) and later on page 298, column 1 states "The [ ] process is complex since it involves multiple products [...] sold [...]"

characterized by different demands across the different products.” (emphasis added) where ‘optimal allocation’ corresponds to *generates a quantity*. In addition, Bichler on page 291, column 1 at the bottom refers to “supply shortages”. and thus corresponds to the situation where *realized demand ... exceeds [ ] planned sales volume*. Finally, Bichler refers to the notion of generating a sales recommendation over different time periods, to wit “[A] manufacturer needs to be able to generate an accurate ATP (available to promise) profile. Companies also need to be able to make real-time projections of the cost of providing these bundles.” (emphasis added) and “In commodity spot markets, supply shortages are known to cause wild price fluctuations.” where ‘generate’ also corresponds to *generates a quantity* and ‘real-time projections’ corresponds to a *recommendation* and ‘supply shortages’ corresponds to the situation where *realized demand ... exceeds [ ] planned sales volume*. Bichler further describes and/or discloses the following limitations.

- *estimating a likelihood that the demand for the at least one of the multiple time periods exceeds the planned sales volume* (Bichler, on page 299, column 2 states: “In the e-utility, dynamic pricing will probably apply when the estimated loads are much higher than predicted. [...] The owner may wish to contract for a short-term “assured” burst to cover the requirements of the premium users. [...] It may be possible for the service provider to estimate the frequency of such bursts, [...].” (emphasis added) where the phrase ‘higher than predicted’ corresponds to *planned sales volume* and a ‘burst’ is the occurrence of demand exceeding predicted amounts, e.g., sales volume exceeding demand, and ‘estimate the frequency of’ these ‘bursts’ corresponds to *estimating a likelihood* per the limitation. Finally, such demand bursts must *ipso facto* occur at *some* time period. Bichler on page 299, column 2 specifically refers to “fairly long time intervals”);
- *collecting realized order data for each of the multiple time periods* (Bichler, on page 298 in the figure illustrates a “Data Warehouse” and a set of “historical

transactions” corresponding to the limitation.)

Note that Ahmed specifically refers to multi-stage stochastic programming models while Bichler, more generally, refers to a variety of decision problems where uncertainty is present. Such problems are ubiquitous and can involve many types of objective functions including, but not limited to, minimizing cost or maximizing expected revenue where the decision variables correspond to a ‘plan’ as indicated by both Ahmed and Bichler (both papers describe the output of the application of optimization techniques in terms of a ‘plan’). Therefore, it would have been obvious to one with ordinary skill in the art at the time of the invention to combine the techniques and problem approaches described in Bichler with the multi-stage stochastic programming approach described in Ahmed and instead of applying it to capacity planning problems in the face of uncertain demand, it is applied to product sales planning problems in the face of uncertainty because this would utilize the benefits and power of the stochastic programming methodology to the case of multi-item, multi-stage sales planning problems.

Neither Ahmed nor Bichler specifically teach the following limitations, but Santos, in an analogous art does as shown:

- *and a recommendation for whether to accept an order for at least one of the multiple products at a time when demand exceeds a planned sales volume for at least one of the multiple time periods* (Santos [0078] states “Due to the inherent uncertainty in demand forecasting, one embodiment utilizes a two stage stochastic programming model to hedge procurement investments against demand uncertainty. Procurement investments are made in stage one. Demand realization triggers final assembly and sales corresponding to the second stage make and sell decisions.” (emphasis added) where ‘to hedge procurement...’ corresponds to *a recommendation for whether* and ‘make and sell decisions’ corresponds to *accept an order for at least one of the multiple products at a time when demand exceeds a planned sales volume for at least one of the multiple*



*time periods*. Indeed, the decision to sell an item is coextensive with a decision to accept an order, hence has identical scope, and so one implies the other and, furthermore, within the stated context, are equivalent.); *and*

- *a trigger engine for estimating a likelihood that the demand for at least one of the multiple time periods exceeds the planned sales volume* (Santo [0006] states: “A subset of all possible combinations of product demand levels is selected. Each combination is associated with a probability.” (emphasis added) and in [0080], “In step [ ] a probability is associated with each demand level combination. This probability reflects the likelihood that the associated scenario or combination will be realized.” (emphasis added) where ‘combination...’ and ‘the associated scenario’ corresponds to a circumstance where *the demand for at least one of the multiple time periods exceeds the planned sales volume*. In [0076] Santos refers to the “EOL engine” which corresponds to the *trigger engine*.).

Ahmed and Bichler teach systems and methods for establishing inventory control policies and application of multi-stage stochastic programming methods to optimize sales planning decision-making. Santos additionally teaches methods for making recommendations as to make or sell decisions, equivalent to making a recommendation for accepting an order, in a situation with uncertain further demand. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine and improve upon the features of Ahmed/Bichler by incorporating those of Santos because Santos also uses multi-stage stochastic programming methods and provides means for “hedg[ing] procurement investments against demand uncertainty” (Santos [0078]) and thereby optimize a selected objective (Santos claim 12), and that the capability existed at the time of the invention and the resulting improvements would have been predictable.

**Claim 2:**

Ahmed/Bichler disclose and/or describes the limitations of claim 1. Ahmed does not specifically disclose and/or describe the following limitation, but Bichler, as shown does.

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- collecting realized order data comprises continuously collecting new realized order data* (Bichler refers to 'continuous' data collection on page 289, column 1-2: "Flexible pricing requires tight integration between the buy and sell sides, with the capability of real-time updates to key operational data flows." (emphasis added) where 'sell side[ ]' corresponds to *demand*, 'real-time updates' and 'operational data flows' together corresponds to *continuously collecting realized order data*.) *and using the likelihood and the new realized order data to generate a revised sales plan* (Bichler states on page 292, column 1, "If there is demand in excess of planned supply, [...] a manufacturer that has real-time coordination capability with its suppliers can [...] plan the desired configuration, [...] and finally generate an asking price 'on the fly.'" (emphasis added) where the 'demand in excess' corresponds to *the likelihood* and 'plan the desired configuration' corresponds to a *sales plan* and 'generate ...' corresponds to *using the likelihood to generate a price*, hence a plan including price and quantity.)

Therefore, it would have been obvious to one with ordinary skill in the art at the time of the invention to combine the techniques and problem approaches described in Bichler with the multi-stage stochastic programming approach described in Ahmed and instead of applying it to capacity planning problems in the face of uncertain demand, it is applied to product sales planning problems in the face of uncertainty that entails continuous monitoring of order data because this would utilize the benefits and power of the stochastic programming methodology to the case of multi-item, multi-stage sales planning problems and incorporate the capabilities of real-time data updates and processing thereby enabling a more efficient sales management system.

### Claim 3:

Ahmed/Bichler disclose the limitations of claim 1. Bichler further discloses the following limitation, *formulating a multistage stochastic program comprises formulating the multistage stochastic program using IBM OSL Stochastic Extensions* (Bichler on page 295, column 1 states: "In

general, [...] the amount to be procured from each supplier is a difficult optimization problem that is modeled as an integer program and solved using a commercial solver like IBM's Optimization Solutions Library (OSL)." (emphasis added).) Therefore, it would have been obvious to one with ordinary skill in the art at the time of the invention to modify the teachings of Ahmed/Bichler and incorporate the application of software that solves the aforementioned types of problems because the availability of many software options allows facilitates the solutions of the types of problems the instant Application addresses.

#### Claim 4:

Ahmed/Bichler disclose and/or describes the limitations of claim 1. Ahmed/Bichler do not specifically disclose the following limitation, but Santos, as shown, does.

- formulating a multistage stochastic program that generates a quantity of each product to be sold in each of the multiple time periods and a recommendation for pricing each of the multiple products* (Santos, in at least [0067], states: "The sell quantity [ ] indicates the recommended quantity of the product to be sold [...]" (emphasis added) where the system and method of Santos generates the 'recommended quantity' 'to be sold' as per the limitation. Santos, in at least claim 17 further describes "multiple products". Santos, in at least [0037] also describes how multiple period data are handled: "In one embodiment, the EOL engine [ ] is a single period engine. Thus multiple period records defined in FORECAST.TXT are rolled into single period records for FORECAST.EOL." (emphasis added) where 'multiple period' corresponds to *multiple time periods*.)

Ahmed/Bichler further discloses and/or describes the following elements of the limitation. Ahmed, in the abstract, specifically refers to *multi-periods*. Bichler, on page 298, column 2, states: "[T]he output of the optimization engine is a set of [...] recommended prices (or reserve prices for auctions) for each channel, [...]" (emphasis added) where the 'output' corresponds to that which the *stochastic program...generates* and 'recommended prices' corresponds to a *recommendation for pricing* in the limitation. Therefore, it would have been obvious to one with ordinary skill in the

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art at the time of the invention to combine the teachings of Ahmed/Bichler with that of Santos because this would allow the stochastic programming methodology of Ahmed/Bichler to be applied to a class of problems involving the sale of multiple products over multiple time periods and thereby enlarge the scope and applicability of stochastic programming methodology, and solve a larger class of decision problems.

**Claim 5:**

Ahmed/Bichler disclose and/or describes the limitations of claim 1. Ahmed/Bichler further disclose and/or describe the following limitation.

- *estimating a likelihood comprises determining a demand forecast and comparing the demand forecast and the planned sales volume* (Bichler, on page 292, column 1 states: “If there is demand in excess of planned supply, [...]” (emphasis added) where the ‘demand in excess...’ corresponds to the comparison between ‘demand’ and another quantity. Bichler also states that “In typical supply-chain management, demand is [assumed] to be an external variable that needs to be forecasted.” (emphasis added) hence refers to a *forecast of ... demand*. Bichler refers to sales volume: “The transaction volume is large and the suppliers provide volume discounts [...]” (emphasis added) where ‘transaction volume’ corresponds to a *sales volume*. Bichler does not specifically refer to *planned sales volume*, but does refer to *planned supply* as noted earlier.)

Therefore, it would have been obvious to one with ordinary skill in the art at the time of the invention to combine the teachings of Ahmed with that of Bichler because this would allow the stochastic programming methodology of Ahmed to be applied to a class of problems involving the *sale* of multiple products over multiple time periods as opposed to inventory management and capacity expansion and thereby enlarge the scope and applicability of stochastic programming methodology, and solve a larger class of decision problems.

**Claim 6:**

Ahmed/Bichler disclose and/or describes the limitations of claim 1. Ahmed does not specifically disclose the following limitation, but Bichler and Santos, as shown, do.

- *executing the multistage stochastic program using the likelihood to generate a sales plan comprises executing the multistage stochastic program using the likelihood to generate a sales plan for pricing each of the multiple products* (See the rejection of claim 4 where 'recommended prices' corresponds to a *sales plan* and that this applies to "multiple products" as per Santo claim 17. Bichler states on page 292, column 1, "If there is demand in excess of planned supply, [...] a manufacturer that has real-time coordination capability with its suppliers can [...] plan the desired configuration, [...] and finally generate an asking price 'on the fly.'" (emphasis added) where the 'demand in excess' corresponds to *the likelihood* and 'plan the desired configuration' corresponds to a *sales plan* and 'generate ...' corresponds to *using the likelihood to generate a price, hence a plan including price and quantity.*)

Therefore, it would have been obvious to one with ordinary skill in the art at the time of the invention to combine the teachings of Ahmed/Bichler with that of Santos because this would allow the stochastic programming methodology of Ahmed/Bichler to be applied to a class of problems involving the sale of multiple products over multiple time periods and thereby enlarge the scope and applicability of stochastic programming methodology, and solve a larger class of decision problems.

**Claim 7:**

Ahmed/Bichler disclose and/or describes the limitations of claim 1. Ahmed does not specifically disclose and/or describe the following limitation, but Bichler, as shown does.

- *collecting realized order data comprises collecting realized order data from an Internet website* (Bichler, on at least page 289, column 2 states: "The final sell-side channel shown in Figure 1, direct Web-site sales, is basic to business-to-consumer (B2C) models." (emphasis added) wherein 'direct Web-site sales' corresponds to

*collecting ... order data* since such web-based interfaces provide a mechanism for placing, hence collecting, orders.)

Therefore, it would have been obvious to one with ordinary skill in the art at the time of the invention to combine the teachings of Ahmed and Bichler because using modern internet technologies for gathering orders is an efficient and cost-effective means of doing business and facilitates the collection of order data, hence allows the methods of Ahmed to provide more accurate and timely data with which to generate forecasts and execute the aforementioned stochastic programming methodology.

**Claim 8:**

Ahmed/Bichler disclose the limitations of claim 1. Ahmed/Bichler do not specifically disclose *collecting realized order data comprises collecting realized order data from a point-of-sale terminal*. However, the Examiner takes **Official Notice** that it is old and well known in the e-commerce arts to utilize any number of order entry devices such as point-of-sale terminals. Therefore, it would have been obvious to one with ordinary skill in the art at the time of the invention to combine the teachings of Ahmed and Bichler because using modern internet technologies and other electronic communication systems for gathering orders is an efficient and cost-effective means of doing business and facilitates the collection of order data, hence allows the methods of Ahmed to provide more accurate and timely data with which to generate forecasts and execute the aforementioned stochastic programming methodology.

**Claim 9:**

Ahmed/Bichler disclose and/or describes the limitations of claim 1. Ahmed does not specifically disclose and/or describe the following limitation, but Bichler, as shown does.

- *collecting realized order data comprises collecting realized order data from a reverse auction* (Bichler, on page 289, column 2 states: "Therefore, many companies may have to implement a hybrid procurement strategy [...] for some portion of the anticipated demand, and use reverse auctions [...]” (emphasis added) where ‘anticipated demand’ corresponds to *collecting realized order data* and ‘use reverse

auction' corresponds to order data *from* a reverse auction. Note, the action of *procuring* must *ipso facto* involve creating sales demand for sellers, hence provide for *collecting [ ] order data*. Bichler further refers to data collection on page 289, column 1-2: "Flexible pricing requires tight integration between the buy and sell sides, with the capability of real-time updates to key operational data flows." (emphasis added) where 'sell side[]' corresponds to *demand*, 'real-time updates' and 'operational data flows' together corresponds to *collecting realized order data*.)

Therefore, it would have been obvious to one with ordinary skill in the art at the time of the invention to combine the teachings of Ahmed and Bichler because using modern procurement channels for gathering orders is an efficient and cost-effective means of doing business and facilitates the collection of order data, hence allows the methods of Ahmed to provide more accurate and timely data with which to generate forecasts and execute the aforementioned stochastic programming methodology.

**Claim 10:**

Ahmed/Bichler disclose the limitations of claim 1. Ahmed/Bichler do not specifically disclose and/or describe the following limitation, but Examiner takes **Official Notice** as disclosed and/or described below.

- *keeping a counter of the quantity of realized order data being collected* (Examiner takes **Official Notice** that it is old and well-known as well as commonplace in the software arts to track or monitor the number of specified events, items, or pieces of data that are computed, stored and/or collected.)

Therefore, it would have been obvious to one with ordinary skill in the art at the time of the quantity of invention to combine the teachings of Ahmed and Bichler and utilize standard software programming techniques to track certain values, such as the *quantity of realized order data* because the collection of order data, and its quantities and associated values enables the methods of Ahmed and Bichler and thereby provide more accurate and timely data with which to generate forecasts and execute the aforementioned stochastic programming methodology.

**Claim 11:**

Ahmed/Bichler disclose and/or describes the limitations of claim 10 above. Ahmed/Bichler do not specifically disclose the following limitation, but Santos, as shown, does.

- *comprising calculating a confidence level representing a probability that the realized order data will be outside the range of a confidence interval* (Santos, in at least [0080] states: “For example, mean, standard deviation, and covariance of the demands can be estimated from the sales history of the same or related products.” (emphasis added) where the ‘standard deviation’ is a necessary component for computing a confidence level and as this is estimated ‘from the sales history’ it corresponds to a standard deviation of the value disclosed in claim 10, the realized order quantity. Furthermore, Santos specifically notes use of a confidence level in [0082]: “Optimization of the selected business objective using the selected combinations of demand levels and associated probabilities will produce a result including an optimal raw material buy plan associated with a confidence level.” (emphasis added) where the ‘demand levels’ leads to a ‘confidence level’).

Neither Ahmed, Bichler nor Santos specifically state that the confidence level *represents a probability that the realized order data will be outside the range of a confidence interval*, but Examiner takes **Official Notice** that it is old and well-known as well as common place inventory control and statistical analysis arts that a ‘confidence level’ represents the probability that a random variable lies outside a range specified by the associated confidence interval. Therefore, it would have been obvious to one with ordinary skill in the art at the time of the quantity of invention to combine the teachings of Ahmed/Bichler with that of Santos and compute certain values, such as a *confidence level* because such values are essential elements of the aforementioned stochastic programming (SP) methodology, hence, enables the methods of Ahmed/Bichler and Santos thereby facilitates the application of the aforementioned stochastic programming methodology to the case of multi-item, multi-stage sales planning problems.



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**Claims 12 and 13:**

Ahmed/Bichler/Santos disclose and/or describes the limitations of claim 11 above.

Ahmed/Bichler/Santos do not specifically disclose and/or describe the following limitations, but Applicant's own admissions do (see also Examiner's **Official Notice** as shown below).

- *wherein the confidence level is calculated using a normal distribution program upon determining that the counter has a value above a threshold.*
- *the confidence level is calculated using a gamma distribution program upon determining that the counter has a value above a threshold..* (Applicant on page 15, line 22 states that "The value of a "large" realized order data counter may vary depending upon implementation, as is known to those skilled in the art." (emphasis added). Applicant further notes that when such data are large, application of the normal distribution is appropriate whereas if data is not large, application of the gamma distribution is appropriate. Examiner takes **Official Notice** that it is old and well-known as well as commonplace in the statistical arts to compute confidence intervals and levels using the aforementioned probability distribution functions for large and small sized data sets, respectively.)

Therefore, it would have been obvious to one with ordinary skill in the art at the time of the quantity of invention to combine the teachings of Ahmed/Bichler with that of Santos and compute certain values, such as a *confidence level* using appropriate statistical methodology because such values are essential elements of the aforementioned stochastic programming (SP) methodology, hence, enables the methods of Ahmed/Bichler and Santos thereby facilitates the application of the aforementioned stochastic programming methodology to the case of multi-item, multi-stage sales planning problems.

**Claim 16:**

Ahmed/Bichler disclose the limitations of claim 1. Ahmed/Bichler do not specifically disclose and/or describe the following limitation, but Examiner takes **Official Notice** as disclosed and/or described below.

- *the trigger engine comprises a set of decision variables* (Examiner takes **Official Notice** that it is old and well-known as well as commonplace in the mathematical programming arts to employ the use of *decision variables* in ‘decision problems’. Applicant admits on page 7 line 19 that “a trigger engine is provided that forecasts if the demand for any price class is significantly different from the allocation.” (emphasis added) where the ‘forecast’ is a prediction of a significant difference. Applicant further states on line 21 that the engine is “used to determine [...]”, hence, involved in solving a decision problem and thereby use *decision variables*.)

Therefore, it would have been obvious to one with ordinary skill in the art at the time of the invention to combine the techniques and problem approaches described in Bichler with the multi-stage stochastic programming approach described in Ahmed and incorporate some means for determining when a new plan must be computed. The stochastic programming techniques of Ahmed utilize recourse actions that can be applied depending on realized demand. Thus, use of decision variables to detect when significant differences arise in product sales planning problems enables the benefits and power of the stochastic programming methodology to the case of multi-item, multi-stage sales planning problems.

**Claim 17:**

Ahmed/Bichler disclose the limitations of claim 16 above. Ahmed also shows the limitations with respect to generating plans for *multiple products* in *multiple price classes* as per the rejections of the first limitations in claims 1, 15 and 20 above. Ahmed/Bichler do not specifically disclose and/or describe the following limitation, but Santos, in view of Examiner’s **Official Notice**, as shown, does.

- *a variable indicating the planned sales volume of one of the multiple products in one of the multiple price classes* (Santos in at least [0055] states: “SellQty.sub.i is the quantity of product i to be sold.” (emphasis added) where the phrase ‘to be sold’ indicates a *planned sales volume*.);

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- *a variable indicating the quantity of one of the multiple products in one of the multiple price classes manufactured in a current time period to be sold in a next time period* (Santos, in at least [0026] states: “Demand forecasting is performed before manufacturing a new product.” (emphasis added) where the ‘demand forecasting’ quantity corresponds to the amount to be manufactured and since this is done ‘before manufacturing’ it *ipso factor* corresponds to the amount to be *manufactured in* a current time period and *to be sold in a next time period*. Moreover, as Santos notes in [0078], “Demand realization triggers final assembly and sales corresponding to the second stage make and sell decisions. This multi-stage approach reflects the reality that purchase decisions frequently must be made well in advance of realization of the demand.” (emphasis added) where the ‘second stage’ specifically corresponds to a later time period.); *and*
- *a variable indicating the quantity of one of the multiple products in one of the multiple price classes manufactured in the current time period to be sold in the current time period* (Examiner notes that this limitation is met by the rejection of the first limitation in that, depending on how long a given time period is and how it is defined, the aforementioned ‘forecast’ quantity can denote the amount of manufactured items to be sold in the current *time period*. Moreover, Santos acknowledges that for some items, such as “[r]aw materials, for example, might take several weeks or months lead time for acquisition while assembly might take a few hours.” (emphasis added) where ‘a few hours’ could correspond to the current time period and ‘assembly’ is a manufacturing process, hence yields a *quantity... manufactured in the current time period*.)

Examiner takes **Official Notice** that it is old and well-known as well as commonplace in the mathematical programming arts and specifically in the multi-stage stochastic programming arts to denote quantity variables for specified stages or time periods typically using notation involving subscripts. For example, Ahmed on page 9 states: “Krarup [...] presented a formulation of (LSP)

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by defining  $Q_{tr}$  as the quantity produced in period  $t$  to satisfy the demand in period  $r = t, \dots, T$ .

Therefore, it would have been obvious to one with ordinary skill in the art at the time of the invention to combine the teachings of Ahmed/Bichler with those of Santos to model multi-stage and multi-item sales planning problems with variables denoting the quantities described in the limitation because this facilitates the formulation of an appropriate math program thus rendering it amenable to solution using various stochastic programming software packages.

**Claim 18:**

Ahmed/Bichler disclose the limitations of claim 16 above. Ahmed also shows the limitations with respect to generating plans for *multiple products* in *multiple price classes* as per the rejections of the first limitations in claims 1, 15 and 20 above. Ahmed further discloses and/or describes the following limitations.

- *a production constraint* (Ahmed on page 9 states: "Krurup [...] presented a formulation of (LSP) by defining  $Q_{tr}$  as the quantity produced in period  $t$  to satisfy the demand in period  $r = t, \dots, T$ ." (emphasis added) hence corresponds to *a production constraint*.);
- *a demand constraint* (Ahmed on page 7 states: "Problem parameters  $\alpha_t$ ,  $\beta_t$ ,  $h_t$ , and  $d_t$  represent the production cost, set-up cost, holding cost, and the demand in period  $t$ ." (emphasis added) where in the associated math program the demand is within a constraint equation, hence serves as *a demand constraint*.);

Ahmed does not specifically disclose and/or describe the following limitation, but Bichler, as shown, does.

- *a profit function that accounts for total revenue for each of multiple products, wherein the profit function comprises* (Bichler on page 290 column 1 states: "Revenue management originated in the airline industry as the practice of controlling the availability and/or pricing of travel seats in different booking classes, with the objective of maximizing revenue and/or profits." (emphasis added) where the 'objective' is an objective function that corresponds to *a profit function*.);

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- *and a service level constraint* (Bichler, on page 300, column 1 specifically refers to a *service level*: “By standardizing the service classes (and possibly also the applications used by the premium service classes), the service provider may be able to develop robust statistical models for the bursting and thereby manage the capacity needed to meet the assured service levels.” (emphasis added) where ‘assured service levels’ corresponds to a *service level constraint*.)

Therefore, it would have been obvious to one with ordinary skill in the art at the time of the invention to combine the teachings of Ahmed with those of Bichler to model multi-stage and multi-item sales planning problems with variables and constraints described in the limitations because this facilitates the formulation of an appropriate math program thus rendering it amenable to solution using various stochastic programming software packages.

**Claim 19:**

Ahmed/Bichler disclose and/or describes the limitations of claim 10 above. Ahmed/Bichler do not specifically disclose the following limitation, but Santos, as shown, does.

- *wherein the profit function further comprises an on-hand inventory constraint* (Santos, in at least [0062] states: “Gross profit is defined as follows: (revenue – inventory exposure - procurement investment + writeoff salvage value + ending inventory value of non - unique parts) ÷ gross profit” (emphasis added) where ‘inventory exposure’ is an *on-hand inventory constraint*.)

Therefore, it would have been obvious to one with ordinary skill in the art at the time of the quantity of invention to combine the teachings of Ahmed/Bichler with that of Santos and incorporate on-hand inventory levels into a profit function because they strongly affect profitability and are therefore essential elements of the aforementioned stochastic programming (SP) methodology, and that the capability existed at the time of the invention and the resulting improvements would have been predictable.

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### Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry of a general nature or relating to the status of this application or concerning this communication or earlier communications from the Examiner should be directed to **Mark A. Fleischer** whose telephone number is **571.270.3925**. The Examiner can normally be reached on Monday-Friday, 9:30am-5:00pm. If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, **Bradley Bayat** whose telephone number is **571.272.6704** may be contacted.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://portal.uspto.gov/external/portal/pair> <<http://pair-direct.uspto.gov>>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at **866.217.9197** (toll-free). Any response to this action should be mailed to:

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or faxed to **571-273-8300**.

Hand delivered responses should be brought to the **United States Patent and Trademark Office**

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28 October 2008

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Supervisory Patent Examiner, Art Unit 3624